



DEPARTMENT OF THE NAVY
NAVAL AIR SYSTEMS COMMAND
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NAVAIRINST ^{IN REPLY REFER TO} 3710.9D
AIR-4.6
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NAVAIR INSTRUCTION 3710.9D

From: Commander, Naval Air Systems Command

Subj: ANTHROPOMETRIC ACCOMMODATION IN NAVAL AVIATION

Ref: (a) OPNAVINST 3710.37A of 6 Feb 06
(b) Manual of the Medical Department, U.S. Navy, NAVMED P-117
(c) BUMEDINST 3710.1 of 11 Jul 77
(d) NOMI 6110 Ser 00/1262 of 10 Dec 97
(e) NOMI 6110 Ser 00/1541 of 20 Nov 96
(f) CNATRA msg dtg 301600Z of Mar 98
(g) COMTRAWING TWO msg dtg 201602Z of Mar 98
(h) VT-21 msg dtg 162359Z of Jan 98
(i) VT-21 msg dtg 170001Z of Jan 98
(j) HS-10 msg dtg 102158Z of Mar 98
(k) NAVAIRPAC msg dtg 271806Z of Apr 98
(l) JSSG-2010-3 of Oct 98
(m) NAWCADPAX/TM-2000/2 of 8 Feb 00
(n) NAVAIRINST 4355.8C of 4 Dec 87
(o) NAVAIRINST 4130.1C of 31 Jan 92
(p) NAVAIR 13520 Ser AIR-4.6/6020 of 25 Sep 06

Encl: (1) Personal Anthropometric Codes for Tactical, Trainer, Rotary Wing, and Fixed Wing Non-Ejection Aircraft
(2) Personal Anthropometric Codes for Legacy Phase-Out Aircraft
(3) Trainer and Tactical Aircraft Anthropometric Restriction Codes
(4) Rotary Wing and U.S. Coast Guard HH-65 Aircraft Anthropometric Restriction Codes
(5) Fixed Wing Non-Ejection and U.S. Coast Guard HU-25 Aircraft Anthropometric Restriction Codes
(6) A Guide to Using the Tactical, Trainer, Rotary Wing, and Fixed Wing Non-Ejection Aircraft Anthropometric Restriction Codes
(7) Legacy Phase-Out Aircraft Anthropometric Restriction Codes

1. Purpose. This instruction will:

a. Establish Naval Air Systems Command (NAVAIR) policy and assign responsibilities for implementing reference (a) to ensure that the physical dimensions of flight crew personnel, fully-equipped, are accommodated by the dimensions and configurations of the aircraft crew stations to which they are assigned;

b. Establish responsibilities for the timely development of crew station geometric data on aircrew physical accommodation and issuance of this information to those agencies responsible for assigning flight crew personnel; and

c. Improve aircrew and aviation safety, operational readiness, and affordability through implementation of an aggressive, proactive aircrew anthropometric accommodation program.

2. Cancellation. This instruction supersedes NAVAIR Instruction 3710.9C of 12 December 2001. Since this is a major revision, changes are not indicated.

3. Scope. This instruction applies to all echelons and all weapons systems and equipment under the management of the Commander, NAVAIR (COMNAVAIR).

4. Definitions

a. Accommodation and compatibility refer to whether there is, at minimum, one seat position in an aircraft that allows a particular flight crewmember to see, reach, and actuate all that must be seen or activated during all phases of flight, and to safely egress a disabled aircraft.

b. For purposes of this instruction, flight crew personnel refer to naval (Navy and Marine Corps) pilots, Naval Flight Officers (NFOs), and naval aircrew personnel who have met the physical entrance requirements for flight programs outlined in reference (b). In some cases, civilian aircrew personnel are also included (e.g., contracted flight instructors or test pilots).

5. Background

a. For many years, the anthropometric data of flight crew personnel has been collected, coded, and recorded by the Bureau of Medicine, following reference (c). These measurements have been valuable in assigning naval pilots and NFOs to Navy aircraft with some assurance that no anthropometric limitations or hazards existed. However, as detailed in references (d) and (e), this process has been problematic. Some of the problems are inconsistent or inaccurate measurement techniques and inconsistent enforcement of the results, as supported by references (f) through (k).

b. It is a recognized fact of naval aviation that aircrew stations in some aircraft do not physically accommodate all personnel potentially eligible for aviation accession. The consequences of assigning an anthropometrically incompatible crewmember to an aircraft can be catastrophic. It is essential to accurately identify these aircraft that must have anthropometric restrictions, including the anthropometric dimensions associated with those restrictions, to properly match potential aircrew candidates to appropriate aircraft. Some important considerations include helmet-to-canopy or canopy breaker clearance (ejection seat equipped aircraft), functional reach (leg and arm) to critical controls, and external vision, as defined in references (l) and (m).

6. Discussion

a. General. Emerging technologies have made it more viable and much easier to take accurate and consistent anthropometric measurements of both personnel and cockpit geometry. Reference (m) establishes the anthropometric measuring procedures for both personnel and aircraft. The entire inventory of Navy and Marine Corps aircraft has recently been re-measured and re-coded using reference (m). This will ensure that cockpit geometry changes resulting from configuration changes are captured in a baseline database. This will be an ongoing process as new cockpit configuration changes and aircrew clothing/equipment changes impact cockpit geometry and/or accommodation.

b. Anthropometric Restriction Codes

(1) Personal anthropometric codes are a numeric value or combination of values assigned to a set of anthropometric dimensions divided into discrete intervals. Four anthropometric dimensions (sitting eye height, thumb tip reach, buttock-knee length, and sitting height) have been codified in 13 intervals, 0-12 (enclosure (1)). This coding system is currently in place for tactical, rotary wing, and fixed wing non-ejection aircraft, and their respective trainer aircraft. For those soon to be phased out legacy aircraft not measured under reference (m), four different anthropometric dimensions (sitting height, functional reach, buttock-knee length, and leg length) were codified in intervals of 0-9 (enclosure (2)) in previous instruction releases.

(2) Anthropometric Restriction Codes (ARCs) for tactical, trainer, rotary wing, and fixed wing non-ejection aircraft are identified in red in enclosures (3) through (5), which indicate that for a range of anthropometric dimensions, there is not a suitable seat position to maintain safety of flight in that particular aircraft. NAVAIR does not recommend flight crew personnel with that set of dimensions be assigned for flight duty to a respective aircraft receiving that ARC. A guide for reading enclosures (3) through (5) is included as enclosure (6). Pre-existing ARCs are identified for legacy phase-out aircraft not measured under the guidance in reference (m). These pre-existing ARCs can be seen in enclosure (7), where numbers within parentheses indicate the need for a fit check, and numbers outside parentheses indicate there is not a suitable seat position to maintain safety of flight in that particular aircraft. NAVAIR does not recommend flight crew personnel with that set of dimensions be assigned for flight duty to a respective aircraft receiving that ARC.

(3) As additional aircraft evaluations are completed, this instruction will be updated to apply the 13 coded intervals described in enclosure (1) to new ARCs as displayed in enclosures (3) through (5).

7. Policy. The following aircrew accommodation policies are set forth for NAVAIR:

a. New aircraft developed and procured for Navy and Marine Corps use will accommodate the anthropometric range of the aviator population specified by reference (1), which will be incorporated in the aircraft Type/Detail Specification/Statement of Work. Accommodation of less than the full range will be justified through trade studies and cost-benefit analysis.

b. Modifications to existing aircraft crew stations will not degrade existing accommodation unless sufficient justification is presented to, and accepted by, the appropriate Aircraft Program Office.

c. The impact of proposed crew station designs and/or modifications on aircrew accommodation will be determined and, where ARCs are justified, restrictions will be identified to those agencies responsible for assigning and training aircrew personnel. Once established for particular crew stations, ARCs apply to civilian aircrew and aircraft pilots (e.g., contracted flight instructors and test pilots) assigned to support an aircraft program.

d. Due to the catastrophic nature of the consequences of assigning an anthropometrically incompatible crewmember to an aircraft, no waivers should be granted for anthropometric incompatibilities.

8. Responsibilities - NAVAIR Headquarters:

a. The Acquisition Executive for Program Management (AIR-1.0), Program Executive Officer for Tactical Aircraft Programs (PEO(T)), Program Executive Officer for Air Anti-Submarine Warfare, Assault and Special Mission Programs (PEO(A)), Program Executive Officer for Strike Weapons and Unmanned Aviation (PEO(W)), Program Executive Officer for Joint Strike Fighter (PEO(JSF)), and Program Managers, AIR (PMAs), are responsible for ensuring flight crew personnel are accommodated in the crew stations of the aircraft under their cognizance and for justifying any deviation from full accommodation, as stated above in paragraph 7a. For new aircraft (including prototypes), the level of accommodation of flight crew personnel will be documented and presented to the reviewing authority at each major program milestone, along with justification for less than full accommodation. For existing aircraft, the Configuration Control Board (CCB) will be provided with a statement reflecting

the impact of any Engineering Change Proposal (ECP), Rapid Action Minor Engineering Change (RAMEC), or other proposed change on aircrew accommodation. Aircraft Program Managers, via the appropriate Systems Engineering (AIR-4.1) Class Desk, will request information regarding the level of accommodation and/or extent of anthropometric restrictions at the following times:

(1) No later than 60 days prior to program initiation, milestone B, and full-rate production decision review (previous milestones I, II, and III);

(2) During mockup inspections as required by reference (n), (if applicable); and

(3) No later than 30 days prior to clearing the aircraft for flight by Navy or Marine Corps flight crew and enlisted aircrew. PMAs will direct sufficient resources to the Human Systems Department (AIR-4.6) to document the level of accommodation and generate codes in accordance with enclosures (3) through (5).

b. The Assistant Commander for Research and Engineering (AIR-4.0) and AIR-4.1 will support the responsibilities listed above in paragraph 8a(1) and notify AIR-4.6 of any planned ECPs, RAMECs, or other changes which may impact crew station geometry or aircrew physical accommodation in aircraft under their cognizance, and will ensure this instruction is referenced in Fleet Support Team charters/agreements and design cognizance transfers.

c. Advanced Development Program Officers will support the responsibilities listed above in paragraph 8a(1) and provide direction and resources to AIR-4.6 to measure the crew stations of each aircraft and provide results prior to clearing the aircraft for flight by naval pilots, NFOs, and civilian pilots.

d. AIR-4.6 will:

(1) Investigate ECPS, RAMECs, and other proposed changes suspected or predicted to impact crew station geometry or aircrew physical accommodation when reviewing CCB change requests per reference (o), or when requested by PMAs via AIR-4.1 or other cognizant offices. If a proposed change is determined to impact aircrew physical accommodation, AIR-4.6

will coordinate the requirements and resources, via AIR-4.1 or other applicable offices, for the assessment of the magnitude of the impact in the affected aircraft. AIR-4.6 will provide the results of such an assessment to the cognizant Class Desk and PMA prior to CCB action. When an assessment indicates ARCs, or revised ARCs, are recommended for the aircraft and a change is approved by the CCB, AIR-4.6 will ensure Naval Air Warfare Center Aircraft Division (NAWCAD), Naval Air Warfare Center Weapons Division (NAWCWD), and other Navy activities participating in flight test of the aircraft under change are advised of the new anthropometric restrictions and will then revise the ARCs contained within this instruction;

(2) Assess the design of crew stations in new aircraft (including prototypes) with respect to physical compatibility, as compared to the eligible aircrew population defined in reference (1). Provide input as requested for use in trade studies with respect to anthropometric accommodation. Where it is determined that new aircraft will not accommodate a proportion of the specified population, AIR-4.6 will ensure NAWCAD, NAWCWD, and/or other Navy activities participating in flight test of the new aircraft are advised of recommended ARCs placed on the aircraft;

(3) Investigate new items of aircrew flight clothing and equipment, life support systems, escape systems (e.g., ejection seats), fixed seating, and other aircrew mounted systems undergoing development (including prototypes), proposed aircrew system changes, or other proposed changes to existing aircrew physical accommodation in crew stations. If it is determined that a new item of aircrew flight clothing, equipment, etc., will impact aircrew accommodation, the appropriate PMA will provide direction and resources to NAWCAD to assess the magnitude of the impact in each affected aircraft model and provide results to AIR-4.6 prior to CCB action;

(4) Manage and maintain the Man-Machine Integration Laboratory, including related field equipment and the expertise and resources required to measure aircraft crew stations, analyze and develop anthropometric measuring procedures, and identify required anthropometric restriction codes;

(5) Monitor all existing inventory aircraft, investigate suspected or reported aircrew accommodation problems, and notify

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AIR-4.1 and appropriate PMAs when it is determined that aircraft anthropometric restrictions need revision, as evidenced through reference (p) and enclosure (3); and

(6) Revise and update the ARCs contained in this instruction as required and issue revised ARCs to appropriate commands involved in the aviation accession process on a timely basis through a message change to this instruction.

9. Procedures and Actions. Commands with responsibilities under this instruction shall develop appropriate procedures and take whatever actions are necessary to fully implement and support the intent of this instruction.

10. Review. AIR-4.6 shall annually review the contents herein and provide recommendations for changes and additions/deletions.

11. Forms. NAVAIR 4130/1, CCB Change Request, is available electronically via the NAVAIR Directives Web site at <http://directives.navair.navy.mil/> under "NAVAIR Forms".



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Distribution:

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Electronic, via NAVAIR Directives Web site
<http://directives.navair.navy.mil/>

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PERSONAL ANTHROPOMETRIC CODES FOR TACTICAL, TRAINER, ROTARY
WING, AND FIXED WING NON-EJECTION AIRCRAFT

CODE	Nude Body Weight (lbs.)	Sitting Eye Height (in.)	Thumb Tip Reach (in.)	Buttock- Knee Length (in.)	SITTING HEIGHT (in.)
0	<100	<26	<26	<20.4	<31
1	100-116.5	26-26.4	26-26.4	20.5-20.9	31-31.9
2	116.6-136	26.5-26.9	26.5-26.9	21-21.9	32-32.9
3	136.1-140	27-27.4	27-27.4	22-22.4	33-33.9
4	140.1-155	27.5-27.9	27.5-27.9	22.5-25.4	34-34.4
5	155.1-170	28-28.4	28-28.4	25.5-25.9	34.5-37.4
6	170.1-185	28.5-28.9	28.5-28.9	26-26.4	37.5-38.4
7	185.1-195	29-29.4	29-29.4	26.5-26.9	38.5-38.9
8	195.1-204	29.5-29.9	29.5-29.9	27-27.4	39-39.4
9	204.1-213	30-30.4	30-30.4	27.5-27.9	39.5-39.9
10	213.1-235	30.5-30.9	30.5-30.9	28-28.4	40-40.4
11	235.1-245	31-31.4	31-31.4	28.5-28.9	40.5-40.9
12	>245	>31.5	>31.5	>29	>41

PERSONAL ANTHROPOMETRIC CODES FOR LEGACY PHASE-OUT AIRCRAFT

CODE	Sitting Height (in.)	Functional Reach (in.)	Buttock-Knee Length (in.)	Leg Length (in.)
9	40.0-41.0	< or = 27.9	> 28.0	49.0-50.0
8	39.5-39.9	28.0-28.4	27.0-28.0	48.0-48.9
7	39.0-39.4	28.5-28.9	26.5-26.9	47.0-47.9
6	38.5-38.9	29.0-29.4	26.0-26.4	46.0-46.9
5	38.0-38.4	29.5-30.4	25.5-25.9	45.0-45.9
4	35.0-37.9	30.5-30.9	25.0-25.4	43.0-44.9
3	34.0-34.9	31.0-31.4	24.0-24.9	40.0-42.9
2	33.0-33.9	31.5-32.4	23.0-23.9	39.0-39.9
1	32.5-32.9	32.5-33.9	22.0-22.9	38.0-38.9
0	32.0-32.4	> or = 34.0	< or = 21.9	36.0-37.9

Trainer and Tactical Pilot A&Cs			Sitting Eye Height (SEH) in inches													Thrust Tip Reach (TTR) in inches													SEH+TTR	Buttock Knee Length (BKL) in inches													BKL+SEH	Sitting Height (SH) in inches													SH+BKL	Whole Body Weight in pounds Minimum Maximum	
			1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2		3	4	5	6	7	8	9	10	11	12																				
Aircraft	Orientation	Seat	<41	41-46	46.5-47.4	47.5-48.4	48.5-49.4	49.5-50.4	50.5-51.4	51.5-52.4	52.5-53.4	53.5-54.4	54.5-55.4	55.5-56.4	>56.5	<44	44-46.5	46.5-47.4	47.5-48.4	48.5-49.4	49.5-50.4	50.5-51.4	51.5-52.4	52.5-53.4	53.5-54.4	54.5-55.4	55.5-56.4	>56.5	<48	48-50.5	50.5-51.4	51.5-52.4	52.5-53.4	53.5-54.4	54.5-55.4	55.5-56.4	56.5-57.4	57.5-58.4	58.5-59.4	59.5-60.4	60.5-61.4	>61.5	<41	41-42.9	42.9-44.8	44.8-46.7	46.7-48.6	48.6-50.5	50.5-52.4	>52.5									
T-6A	Both		0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	20	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	20			
T-34C	Forward		0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	210	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	210			
T-2C	Forward	LD-1A	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	219	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	219			
T-45A/C	Both	RACES	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	214	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	214			
T-65A/C	Both	RACES P ¹	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	213	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	213			
YB-37C	Both		0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	210	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	210			
T-64A	Both		0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	212	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	212			
YC-12	Both		0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	27	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	27			
F/A-18C/D/H/P	Forward	RACES	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	254	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	254			
F/A-18C/D/H/P	Forward	RACES P ¹	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	212	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	212			
P-14D	Forward	RACES	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	269	0	1	2	3	4	5	6	7	8	9	10	11	12	10-23	0	1	2	3	4	5	6	7	8	9	10	11	12	7-23		
P-14D	Forward	RACES P ¹	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	217	0	1	2	3	4	5	6	7	8	9	10	11	12	9-23	0	1	2	3	4	5	6	7	8	9	10	11	12	6-23		
B-3B	Left Seat	ESCAPAC	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	213	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	213			
KA-6B	Pilot	GRD-7A	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	219	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	219			
T/ATP-BB	Both	ATD-4	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	216	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	216			

Trainee and Technical Man		Sitting Eye Height (SEH) in inches													Thumb Tip Reach (TFR) in inches													Buttock Knee Length (BKL) in inches													Sitting Height (SH) in inches													SH-MIL	Male Body Weight in pounds		
Pilot/Officer's M50, M30, M40, and BMD ASBC		1	2	3	4	5	6	7	8	9	10	11	12	13	1	2	3	4	5	6	7	8	9	10	11	12	13	1	2	3	4	5	6	7	8	9	10	11	12	13	1	2	3	4	5	6	7	8	9	10	11	12	13		Minimum	Maximum	
Aircraft	Configuration	Seat																																																							
T-34C	Att		24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	30-31	140	204				
T-3C	Att	LD-1A	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	30-31	140	204				
F/A-18C/D/R/F	Att	BACES	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	30-31	136	213				
F/A-18C/D/R/F	Att	BACES P1	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	30-31	136	245				
F-14D	Att	BACES	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	30-31	136	213				
F-14D	Att	BACES P1	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	30-31	136	245				
B-39	Right Seat	ESCAPAC	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	30-31	136	213				
EA-6B	BCHD 1	GRD-TA	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	30-31	140	204				
EA-6B	BCHD 2	GRD-TA	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	30-31	140	204				
EA-6B	BCHD 3	GRD-TA	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	24-26 10.4	26.5-27 10.9	27-28 10.9	28-29 11.4	29-30 11.4	30-31 11.4	31-32 11.4	32-33 11.4	33-34 11.4	34-35 11.4	35-36 11.4	36-37 11.4	30-31	140	204				

Enclosure (4)

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Fixed Wing Non-Ejection and USCG HU-25 ANCW		Sitting Eye Height (SEH) in inches													Thumb Tip Reach (TTR) in inches													SEH+ TTR	Buttock Knee Length (BKL) in inches													SEH+ BKL	Sitting Height (SH) in inches													SH+ BKL											
		0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12		0	1	2	3	4	5	6	7	8	9	10	11	12		0	1	2	3	4	5	6	7	8	9	10	11	12												
Aircraft	Configuration	<26	26- 26.4	26.5- 26.9	27- 27.4	27.5- 27.9	28- 28.4	28.5- 28.9	29- 29.4	29.5- 29.9	30- 30.4	30.5- 30.9	31- 31.4	>31.5	<26	26- 26.4	26.5- 26.9	27- 27.4	27.5- 27.9	28- 28.4	28.5- 28.9	29- 29.4	29.5- 29.9	30- 30.4	30.5- 30.9	31- 31.4	>31.5	<26.4	26.5- 26.9	27- 27.4	27.5- 27.9	28- 28.4	28.5- 28.9	29- 29.4	29.5- 29.9	30- 30.4	30.5- 30.9	>30.9	<26.4	26.5- 26.9	27- 27.4	27.5- 27.9	28- 28.4	28.5- 28.9	>28.9	<31	31- 31.4	31.5- 31.9	32- 32.4	32.5- 32.9	33- 33.4	33.5- 33.9	34- 34.4	34.5- 34.9	35- 35.4	35.5- 35.9	36- 36.4	36.5- 36.9	37- 37.4	37.5- 37.9	38- 38.4	38.5- 38.9	39- 39.4	39.5- 39.9	40- 40.4	40.5- 40.9	>41
C-130J	Both	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	D10	0	1	2	3	4	5	6	7	8	9	10	11	12	D10	8-23	0	1	2	3	4	5	6	7	8	9	10	11	12	D10	5-22									
C-130J	Both	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	D10	0	1	2	3	4	5	6	7	8	9	10	11	12	D10	7-23	0	1	2	3	4	5	6	7	8	9	10	11	12	D10	5-22									
F-30	Both	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	D11	0	1	2	3	4	5	6	7	8	9	10	11	12	D11	8-23	0	1	2	3	4	5	6	7	8	9	10	11	12	D11	5-22									
H-30	Both	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	D11	0	1	2	3	4	5	6	7	8	9	10	11	12	D11	8-23	0	1	2	3	4	5	6	7	8	9	10	11	12	D11	4-22									
C-2A	Both	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	D11	0	1	2	3	4	5	6	7	8	9	10	11	12	D11	8-23	0	1	2	3	4	5	6	7	8	9	10	11	12	D11	6-22									
H-6A/B	Both	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	D10	0	1	2	3	4	5	6	7	8	9	10	11	12	D10	6-23	0	1	2	3	4	5	6	7	8	9	10	11	12	D10	4-22									
C-40A	Both	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	D8	0	1	2	3	4	5	6	7	8	9	10	11	12	D8	3-23	0	1	2	3	4	5	6	7	8	9	10	11	12	D8	4-22									
C-37A	Both	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	D7	0	1	2	3	4	5	6	7	8	9	10	11	12	D7	4-23	0	1	2	3	4	5	6	7	8	9	10	11	12	D7	2-22									
C-300/0	Both	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	D10	0	1	2	3	4	5	6	7	8	9	10	11	12	D10	7-23	0	1	2	3	4	5	6	7	8	9	10	11	12	D10	4-22									
C-38	Both	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	D8	0	1	2	3	4	5	6	7	8	9	10	11	12	D8	7-23	0	1	2	3	4	5	6	7	8	9	10	11	12	D8	5-22									
HU-25	Right	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	D8	0	1	2	3	4	5	6	7	8	9	10	11	12	D8	8-23	0	1	2	3	4	5	6	7	8	9	10	11	12	D8	5-22									
HU-25	Left	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12	D11	0	1	2	3	4	5	6	7	8	9	10	11	12	D11	8-23	0	1	2	3	4	5	6	7	8	9	10	11	12	D11	4-22									

A GUIDE TO USING THE TACTICAL, TRAINER, ROTARY WING, AND FIXED
WING NON-EJECTION AIRCRAFT ANTHROPOMETRIC RESTRICTION CODES

Enclosures (3) through (5) were prepared for insertion to future releases of the NAVAIR 3710.9 and CNATRA 13520.1 series instructions. They are presented in chart format for ready viewing of pipeline relationships.

The charts were designed to be used by personnel responsible for assigning candidate USN/USMC aviators to appropriate aircraft pipelines and use the coding intervals established in enclosure (1).

These new ARC charts account for eight parameters of concern, including a first pass on five criteria (sitting eye height, thumb tip reach, buttock-knee length, sitting height, and weight). To potentially be compatible with the aircraft, an individual should have each dimension within one of the green cells and meet the listed weight criteria, when applicable. Then the assessment of aviator suitability should evaluate three critical relationships:

- sitting eye height and thumb tip reach (ability to attain design eye point and reach to controls);
- sitting eye height and buttock-knee length (ability to attain design eye point and operate foot controls); and
- sitting height and buttock-knee length (ability to attain overhead and knee clearances).

In order to calculate the sitting eye height measurement for an individual, subtract 4.8 inches from the sitting height for males, or subtract 4.5 inches from the sitting height for females.

The ARCs were determined from AIR-4.6 univariate results that indicated thresholds required for all dimensions at various seat locations. The resultant minimums and maximums were evaluated concurrently to determine the combined scores required for the critical relationships described above.

LEGACY PHASE-OUT AIRCRAFT ANTHROPOMETRIC RESTRICTION CODES

Aircraft/ Crew Station	Anthropometric Restriction Codes							
	Sitting Height		Functional Reach		Buttock-Knee Length		Leg Length	
	Exclude ⁽¹⁾	Fit Check ⁽²⁾	Exclude ⁽¹⁾	Fit Check ⁽²⁾	Exclude ⁽¹⁾	Fit Check ⁽²⁾	Exclude ⁽¹⁾	Fit Check ⁽²⁾
F-14A Pilot NFO	0 1 2	8 9 8 9		7 8 9 7 8 9		7 8 9 7 8 9		0 1 7 8 9 7 8 9
F-18A, TF-18	0 1 2	8 9		7 8 9		7 8 9		7 8 9
H-3 Series	0 1 2			7 8 9		0 9		0 9

- NOTES: (1) "Exclude" indicates that a candidate aviator having a listed ARC for a listed aircraft/crew station is anthropometrically incompatible with that aircraft/crew station.
- (2) "Fit Check" indicates that a candidate aviator having a listed ARC for a listed aircraft/crew station might be anthropometrically incompatible with that aircraft/crew station and must undergo a fit check to determine whether or not he/she is anthropometrically compatible.